

Spaced Based Augmentation Systems and Methods Using Ionospheric Bounding  
Data to Determine Geographical Correction Source

Abstract of the Disclosure

5            Systems, devices and methods are provided improving the accuracy,  
availability and integrity of GPS service. Specifically, the present invention  
provides a GPS device with the correction messages which are from the most  
accurate and desirable source while at the same time conserving processor and  
memory resources of the device. The method includes receiving GPS data. An  
10   SBAS signal from a first correction source is received. Ionospheric mask messages,  
for a number of grid points, in the received SBAS signal are analyzed. An  
abbreviated bounding region around a group of similar type grid points is  
constructed. The method further includes determining whether the position of the  
GPS device is within the abbreviated bounding region.